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## Afterglow: An Equitable Approach to Design

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## Afterglow: An equitably designed trench coat

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Keywords: Universal design, laser cutting, digital printing, equitable use

### Concept and context:

The design of many ready-to-wear apparel garments assumes the wearer has full physical ability. For some, aging can result in reduced physical ability including limiting range of motion and can make dressing and wearing clothing difficult. (Huppert, 2003). These physiological changes have direct relevance to clothing design. The target market for this conceptual garment were women 50 years old and older. Women in this age category have likely experienced changes in their body ability and have observed that their clothing options are somewhat limited aesthetically and seldom geared toward the demands of the changing older body (McCann, 2016). Therefore, the purpose of this study was to develop a garment that considered the body changes associated with aging while maintaining a classic silhouette and contemporary design aesthetic. Knowing that set-in sleeves can be problematic for wearers with limited upper body range of motion, the researchers designed a contemporary trench coat with a two-part separating sleeve, shoulder seam that can be unsnapped, and easy to use buttons/buttonholes. Aesthetic value was addressed through digital textile print design and laser cutting, while the laser cutting adds functional value through increased movement by allowing the fabric to open when the arms move.

Universal Design (UD) was investigated as the framework for this research. The seven principles of UD were established in 1997 by a group of product designers, architects, engineers, and environmental design researchers. Their intention was to develop guiding principles that product designers could use to "better integrate features that meet the needs of as many users as possible" (The Center for Universal Design, 1997). Apparel scholars have explored the principles of UD as a possible framework for apparel design (Carroll & Gross, 2010; Carroll & Kincade, 2007; Park, et al., 2014; Radvan, 2013; Steinfeld & Maisel, 2012). Most researchers analogously consider all seven principles when designing products, but all seven principles may not be directly relevant to apparel design (Park, et al., 2014; Steinfeld & Maisel, 2012). In this study, the researchers consider each principle of UD individually to more completely understand how these principles may impact apparel design. Specifically, *Afterglow* explored the first principle of UD, *equitable use*. This principle necessitates that "the design is useful and marketable to people with diverse abilities" (The Center for Universal Design, 1997). Within this principle, there are four criteria a) the product is as usable for me as for anyone else, b) the product does not make me feel segregated or stigmatized, c) the product gives me needed privacy, security, and safety, and d) the design of this product appeals to me.

### Functional and aesthetic properties/visual impact:

To address the first sub-principle of *equitable use*, the researchers aimed to revise the design of the sleeve and buttonholes in such a way that it was integrated into the design and most people would be none-the-wiser to the adaptive features. The researchers developed a sleeve that looks like set-in sleeve but is constructed of has two separating parts. The lower part of the sleeve is attached to the jacket armhole and closes with snaps at the wrist, the upper portion is connected to the yoke and closes with a button on the cuff. Both parts are joined at the neckline. Laser cut and bonded tabs hold the sleeve together. Oversized keyhole-shaped buttonholes give more space for the buttons to pass through. If needed, the wearer can unbutton all or some of the buttons and place their arm into the lower sleeve and then button the upper

sleeve to the jacket. Furthermore, the shoulder may be unsnapped to create a larger armhole opening that may be easier for people to insert their arm. To address the second sub-principle, the researchers aimed to retain the classic garment silhouette, in this case, a trench coat, and retain all of the aesthetic characteristics of this garment. The garment features a collar, belt with laser cut and bonded belt loops, piecework on the front placket and yoke, and fisheye darts for contouring. The researchers wanted to ensure that the new approach to the sleeve maintained the same level of coverage and comfort as traditional set-in sleeves, addressing the third sub-principle. The researchers designed the lower sleeve to cover 2/3 of the arm, and the upper sleeve overlaps the lower sleeve by 2 inches. To address the last sub-principle, the researchers developed a digital textile print from long-exposure photographs of dancers holding glowsticks while dancing in a darkened studio. The digital textile print adds aesthetic value while the laser cutting adds functional value through increased ventilation and movement across the back by allowing the fabric to open when the arms move. The laser cut details on the front were intentionally oriented to highlight and frame the wearers face.

**Process, techniques, and execution:**

The garment patterns were custom made for our model who is representative of our target market. First the researchers captured a 3D body scan of our model and created a half-scale dress form from her body scan. The half-scale dress form was developed following procedures outlined in Vuruskan & Ashdown (2018). Block patterns were initially developed by hand using flat patternmaking techniques to fit the half-scale dress form and were digitized into Adobe Illustrator where further pattern manipulations took place. After three iterations to adjust the fit in half-scale, the researchers increased the patterns to full-scale and applied the laser cut designs. In a parallel process, the researchers developed the digitally printed surface design using Adobe Photoshop. The print was repeated onto yardage of silk crepe, steam set, and fused to the silk lining using Pellon fusible web. Next, the researchers laser cut the garment pattern, surface ornamentation, and buttonholes in one process. The button tabs, belt loops, and buttonhole reinforcements were laser cut from the printed fabric backed with Bemis Sewfree tape which is industrial strength adhesive that can be used instead of sewing for a clean-finish look. The final garment was constructed using industrial sewing techniques and the seams finished with Bemis tape.

**Design contribution and innovation:**

*Afterglow* builds on research that explored the application of UD principles for apparel design. The principle of *equitable use* and four sub-principles were relevant and applicable in guiding the design and development of this garment. By using this principle, the researchers feel that *Afterglow* is marketable to a wide variety of people, regardless of their body ability. This principle was a useful guideline for design. Through this design-based research, the researchers contribute new theoretical information regarding the UD principle of *equitable use* and apparel design. Further practical and technological contributions include consideration to sleeve design, and a technology-rich design process that may be applied in future research.

**Date Completed:** June 1, 2018

**Materials:** Silk crepe, Silk lining, Pellon fusible web, Bemis sew free tape

**Measurements:** Female mannequin size large (chest: 40"; waist: 37"; hip: 41").

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